Claims

What is claimed is:

Sub #1

1. A maneuverable apparatus for remotely applying therapeutic energy to biological tissue comprising:

a flexible elongate member having a proximal end, a distal end and a longitudinal first lumen extending there between;

a deflection member fixedly attached to said distal end of said elongate member, said deflection member having a proximal end and a distal end;

a conductor extending within said first lumen for transmitting energy to said distal end of said elongate member, said conductor having a proximal end and a distal end; and

an energy source in communication with said proximal end of said conductor effective to transmit energy through said conductor.

2. The apparatus of claim 1, further including a control handle mounted at the proximal end of said deflection member for flexing said deflection member longitudinally relative to said elongate member, thereby causing said distal end of said elongate member to bend.

Sub #4

3. The apparatus of claim 1, wherein said energy source is a source of light, microwave, heated liquid, ultrasound, or direct current energy.

4. The apparatus of claim 1, wherein said conductor comprises a fiberoptic wave guide.

Sub #2

5. The apparatus of claim 1, wherein said deflection member comprises a second concentric tubular structure.

6. The apparatus of claim 1, wherein at least a portion of said deflection member is transparent to light energy.

7. The apparatus of claim 1, wherein said deflection member is a non-uniformly shaped having an hour glass shape from said distal end to said proximal end, said hour glass shape having at least one narrow portion relative to said distal and proximal ends.

8. The apparatus of claim 7, wherein a narrow portion is positioned between about 0.5 cm and about 10 cm from said distal end of said deflection member.

9. The apparatus of claim 1, wherein said deflection member is a non-uniformly shaped having a tapered narrower sectionin a region at its distal end.

10. The apparatus of claim 1, wherein said deflection member is non-uniformly shaped, having a cut-away region at said distal end of said deflection member.

11. The apparatus of claim 10, wherein said cut-away region is located between about 0.5 cm to about 5 cm from said distal end of said deflection member.

12. The apparatus of claim 6, wherein said transparent material is a fluoropolymer.

13. The apparatus of claim 12, further comprising a layer of reflective material affixed to said distal end of said elongate member.

14. The apparatus of claim 13, wherein said reflective material is gold.

15. The apparatus of claim 1, further comprising a second deflection member attached to said distal end of said elongate member, said second deflection member having a proximal end and a distal end.

16. The apparatus of claim 15, wherein said second deflection member is coupled to a control handle for tensing said second deflection member longitudinally relative to said elongate member, thereby causing said distal end of said elongate member to bend in a direction opposed to said first deflection member.

17. A method for photothera peutically modulating a target tissue, comprising the steps of:

introducing a flexible elongate member into a predetermined tissue site, said flexible elongate member having a proximal end, a distal end and a longitudinal first lumen extending therebetween and a deflection member fixedly attached to said distal end of said elongate member, said deflection member having a proximal end and a distal end;

manipulating said deflection member longitudinally relative to said elongate member, thereby causing said distal end of said elongate member to bend;

positioning a slidable conductor through said lumen proximate to said tissue site; and

transmitting energy to said distal end of said elongate member through said conductor, such that said target tissue is ablated, coagulated or photothera peutically modulated without damaging surrounding tissue.

18. The method of claim 17, wherein said energy is transmitted through a transparent flexible elongate member.

19. The method of claim 17, wherein said energy is laser light.

20. The method of claim 17, wherein said conductor is repeatedly advanced through said lumen.

21. A method for treating trabecular tissue, comprising the steps of:

introducing a flexible elongate member proximate to trabecular tissue, said flexible elongate member having a proximal end, a distal end and a longitudinal first lumen extending therebetween and a deflection member fixedly attached to said distal end of said elongate member, said deflection member having a proximal end and a distal end;

manipulating said deflection member longitudinally relative to said elongate member, thereby causing said distal end of said elongate member to bend;

positioning a slidable conductor through said lumen proximate to said trabecular tissue site; and

transmitting energy to said distal end of said elongate member through said conductor, such that said trabecular tissue is phototherapeutically modulated without damaging surrounding tissue.

22. A method for treating or preventing atrial fibrillation by ablation, coagulation or phototherapeutic processes, comprising the steps of:

introducing a flexible elongate member proximate to atrial tissue, said flexible elongate member having a proximal end, a distal end and a longitudinal first lumen extending therebetween and a deflection member fixedly attached to said distal end of said elongate member, said deflection member having a proximal end and a distal end;

manipulating said deflection member longitudinally relative to said elongate member, thereby causing said distal end of said elongate member to bend;

positioning a slidable conductor through said lumen proximate to said atrial tissue site; and

transmitting energy to said distal end of said elongate member through said conductor, such that said atrial target tissue is ablated, coagulated or phototherapeutically modulated without damaging surrounding tissue, thereby treating or preventing atrial fibrillation.

23. A maneuverable apparatus for remotely applying therapeutic energy to biological tissue comprising:

a flexible elongate member having a proximal end, a distal end and a longitudinal first lumen extending there between;

a deflection member fixedly attached to said distal end of said elongate member, said deflection member having a proximal end and a distal end;

a conductor extending within said first lumen for transmitting energy to said distal end of said elongate member, said conductor having a proximal end and a distal end;

an energy source in communication with said proximal end of said conductor effective to transmit laser energy through said conductor;

a reflectance sensor for measuring intensity of light reflected from said tissue while illuminating said tissue;

a monitor connected to said reflectance sensor for monitoring changes in the intensity of light reflected from said tissue;

an analyzer connected to said monitor for determining the degree of therapeutic treatment based upon said monitored changes in said tissue; and

a controller connected to said analyzer and laser for controlling the output of said laser in response to said reflected light from said treated tissue.

24. A method for treating or preventing atrial fibrillation by ablation, coagulation or phototherapeutic processes, comprising the steps of:

introducing a flexible elongate member proximate to atrial tissue, said flexible elongate member having a proximal end, a distal end and a longitudinal first lumen

extending therebetween and a deflection member fixedly attached to said distal end of said elongate member, said deflection member having a proximal end and a distal end;

manipulating said deflection member longitudinally relative to said elongate member, thereby causing said distal end of said elongate member to bend;

positioning a slidable conductor through said lumen proximate to said atrial tissue site;

transmitting laser energy to said distal end of said elongate member through said conductor;

measuring the intensity of light reflected from said target tissue; and

controlling the energy applied to said site in response to monitored changes in the intensity of said light reflected from said target tissue, thereby treating or preventing atrial fibrillation.